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CONTENTS

Studies in Dental Nomenclature: A Series . . . . . HARRY LYONS. . . . 47

Nutrition and Dental Health . . . . DOROTHEA F. RADUSCH . 50

What Drugs Are Useful in Periodontia Practice? . . . . . HAROLD J. LEONARD, *et al* 54

Initial Statement 54

Discussion 60

Concluding Statement 66

Editorials 68

Abstracts of Current Dental Literature 70

Book Reviews 76

Fifth Postgraduate Program A.A.P. 77

Officers and Committees of A.A.P. 78

What Makes A Profession. (REPRINT) . W. A. SHUMAKER. . . 79

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THE JOURNAL OF PERIODONTOLOGY is published to serve as the professional journal of periodontia; to keep dentists in touch with research being carried on in this field and related sciences; to stimulate greater interest in the supporting tissues of the teeth and their relation to oral and general health. The plan to continue the publication of abstracts indefinitely will make the Journal a fund of extensive information, readily available to students, teachers, researchers, and clinicians.

The Journal is the official organ of the American Academy of Periodontology and will contain, therefore, those papers of scientific and clinical interest which are presented at the annual meetings of that society. Abstracts of important articles related to periodontology that appeared during the year of 1944 will be published in this year's issues.

We are grateful to all who have made available the subject matter from which the abstracts and copies of abstracts have been made, including the authors of the original articles, owners of the journals mentioned in the text of the abstract section, and those who have aided by contributing the material for this issue.

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THE JOURNAL OF PERIODONTOLOGY

APRIL, NINETEEN HUNDRED FORTY-FIVE

Studies in Dental Nomenclature: A Series

By HARRY LYONS, D.D.S., *Richmond, Virginia*

THE AMERICAN ACADEMY of Periodontology has done much for dentistry. Future historians will record that, among its contributions, the Academy was the first dental organization to develop and adopt an official nomenclature for its use. This is not the work of any one person or committee. It is the culmination of a long effort on the part of many Academy members interested in the subject. Nor is the task yet completed. The science of periodontology is not a fully mastered study. Much yet remains to be discovered and learned. As new truths and facts are uncovered, terms will be needed to designate these new findings accurately. Language must be recognized as plastic and subject to the possibility of continuous growth. Only by these virtues can it meet the demands of a science with unexplored horizons.

Social relations of people depend, to a great degree, upon language as the means by which thoughts and ideas may be exchanged. The development of language is in itself a romantic story. As the level of intelligence is raised, the need for better language becomes evident. This truth reaches a peak in the field of the sciences where accuracy in the translation of findings and the exchange of knowledge is basically essential. Dentistry is no exception in this observation. The need for good language in dentistry is basic to the development of its research, literature, educational program and practice.

There is also a need for unity in scientific language. As a matter of fact, the desirability of a language common to all the peoples of the world in all spheres of endeavor is becoming more evident. In a world being made progressively smaller by newer modes of travel and communication, language barriers are as real as were the great walls of ancient cities. A world language such as Esperanto has much to commend itself. In the realm of the sciences, to which contributions might be made from all corners of the world, the need for a common language is even more desirable. In light of this, it must be conceded that the use of several systems of nomenclature within one language and within one country cannot be tolerated by those altruistically interested in progress.

It appears altogether illogical that the dental students in the 39 dental schools in this country are not taught the dental sciences in language common to all. It is the undeniable fact that graduates of our various dental schools are often not able to interpret questions posed by state board examiners accurately because of the numerous systems of nomenclature used; neither are they always able to

◀◀◀ PERIODONTAL MEMBRANE. Ideal functional arrangement of the periodontal fibres, with spaces for vessels and nerves. The fibres can be followed into the bone some distance (Sharpey's fibres). This bone is bordered by an irregular line. Behind that is lamellose bone. The line indicates the border of previous resorption. (Bernhard Gottlieb). *See* Editorial p. 69.

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converse intelligently with each other on dental problems for the same reason. Several recent symposia in this Journal demonstrated this point convincingly. It may be of interest to record that 33 of our dental schools have recently agreed to use the system of periodontal nomenclature recommended by the A.D.A. Committee on Nomenclature as the basis for their instruction in periodontology. Only one has taken a definite stand in opposition. The other five have not yet replied to repeated inquiries. Since the objective of teaching all our dental students in one scientific language appears so desirable, it is hoped that complete unity will soon prevail in this sphere of dental language and that similar projects will soon develop in other fields.

In the development of its language, dentistry inherited several unfortunate language trends from related fields. One of the most glaring examples of these is the use of eponyms, an eponym being a proper name used to designate an entity with which the person of that name was associated. The language of the science of anatomy is replete with eponyms. This trend is also strongly entrenched in other fields, such as pathology and bacteriology. As a consequence, dentistry inherited its share of them. Witness: Riggs' disease, Vincent's infection, Robinson's remedy, Hutchinson's incisor, Stenson's duct, etc., etc. These terms memorialize men who contributed to their special spheres of interest; they do not describe nor do they inform accurately. Only if the conversing parties are schooled in their use are eponyms informative at all. Would any dental scientist presume to know the exact pathologic entity designated as Rigg's disease? Is not the term *parotid gland duct* more informative than the term *Stenson's duct*? Is not the confusion regarding the diagnosis of the various periodontal diseases due, in part, to the use of such terms as *Vincent's infection*?

Another unfortunate trend still prevailing in dental and medical language is the use of the name of a symptom to designate a disease. Such terms as *angina, neuralgia, pyorrhea alveolaris* are names of symptoms commonly used to designate diseases. *Angina* is defined as the symptom of spasmodic, suffocating or choking pain. *Neuralgia* is defined as the symptom of pain arising from *neuritis*. *Pyorrhea alveolaris* indicates a discharge of pus from the alveolar process; this symptom can prevail in several diseases. Therefore, these terms, designating symptoms, do not convey accurate information concerning the disease processes with which they are frequently associated.

The primary prerequisite of terms for use in any sphere, particularly in the realm of science, is that they be informative and descriptive. The more adequately this prerequisite is met the more useful the terms. To be accurately informative and descriptive, scientific terms for use in dentistry and other spheres of the healing sciences should be developed along one of several acceptable plans. This applies equally to the names of diseases, operations, other therapeutic procedures, appliances, etc. If, in addition, the terms are classically pure in their etymological origin, a cultural tone is added to the language. This point will be discussed in a later article.

A term naming a disease should impart definite information regarding its locale and type. It may have its root or base derived from the name of the tissue, organ or system in which the disease is located. To such a root a suitable suffix may be attached to indicate the general nature of the disease. A number

of suffixes may be used for this purpose; *-itis, -osis, -clasia,* among others, indicate certain pathologic entities. By adding one of these suffixes to the name of the afflicted tissue or organ, a useful term indicating the general nature of a disease and its locale is developed. The terms *gingivitis, pulpitis,* and *nephrosis* impart definite information regarding the site of a disease and its general nature. Diseases may also be named on the basis of their distinguishing characteristics. For example, a disease characterized by tubercle formation is informatively named *tuberculosis.* If a disease, named on this basis, is one possible of wide distribution through the body, its locale may be noted by the use of a suitable adjective. In the instance of tuberculosis, if it occurs in the lung, it may properly be designated as *pulmonary* tuberculosis. If preferred, such diseases may be located by the use of a phrase, as *tuberculosis of the lung.* The detailed character of diseases may then be revealed by the additional use of suitable adjectives, such as *acute, chronic, ulcerative, purulent, necrotizing, membranous,* and others.

A comparison of the above plan and an eponymic designation of a disease may be enlightening. The term *Vincent's infection* is often seen in dental literature. What information does it convey and how much does it leave undescribed and undefined? How can the disease in question be named so that its designation may be fully informative and descriptive? The following will indicate the development of a designation for this disease occurring in the mouth. In this instance, it always starts in the gingival sulcus, first involving the gingiva. From this structure, it may spread to involve the entire periodontium and any portion of the oral mucosa. It is, furthermore, an inflammatory disease. By attaching the suffix *-itis* to the name of the afflicted structure, the basic or topographic term is formed: *gingivitis, periodontitis,* or *stomatitis.* So far, the disease has only been located and its grossest character revealed. By adding several suitable adjectives, the particular case of the disease in question may be fully described. Since the disease is characterized by ulceration and necrosis, it may be designated as a *necrotizing, ulcerative gingivitis, periodontitis* or *stomatitis.* Membrane formation being an important feature of the ulceration, the term *ulcerative* may be changed to *ulcero-membranous.* Wide variations in the intensity of the disease prevail; hence, the adjectives *acute, sub-acute,* and *chronic* may be used to indicate the intensity of the disease. A particular case of *Vincent's infection* may, therefore, be designated as *acute, necrotizing, ulcero-membranous gingivitis.* Such a designation is informative and descriptive to a point where both parties engaged in the use of this language can have an excellent mental picture of the particular case. There are many other desirable features to the use of terms of this character. From the viewpoint of a teacher, the use of such terms requires the observer to make an accurate study of the case at hand in order to name it. It, therefore, leads to an orderly approach to the diagnosis of disease. Furthermore, such designations, descriptive and informative of pathologic processes, provide a more rational basis for considerations of treatment. The same general plan may be applied for the development of terms to designate operations, other therapeutic procedures, appliances, etc. These and other topics will be discussed in succeeding articles.

(Continued in the July issue.)

306 Professional Bldg.

Nutrition and Dental Health

II. NEED AND RESPONSIBILITY FOR NUTRITION EDUCATION—DIETARY STANDARDS

By DOROTHEA F. RADUSCH, D.D.S., B.A., M.S., *Minneapolis, Minnesota*

THE FIRST of this series on Nutrition and Dental Health[1] dealt with the widespread prevalence of dietary inadequacies. In discussing the need for improvement of North American diets, Prof. Henry A. Mattill, of the University of Iowa, stated:

We hear it said that malnutrition cannot possibly be as wide-spread as some surveys have implied. Yet the exact proportion of undernourished people, whether it is one third, or more, is not the important item. The real question is why need any be undernourished in a country where surplus food has sometimes been destroyed. Ignorance, prejudice and selfishness are among the causes of man's lack of an inward grace, as the prayerbooks say, and these three human attributes plus poverty which results from them are the principal barriers along the road to improved human nutrition.

How can the rank and file of our citizens be assured of better nutrition? The answer is by education in nutrition and democracy. (*Science*, 99:521, June 30, 1944).

The war has undoubtedly accelerated the interest in nutrition—not just because of the great masses of starving peoples which are the tragic aftermath of war, but also, because of the problems relating to transportation and preservation of food for troops located in far-distant and scattered battle areas under all extremes of climate. At home, consideration of nutrition has become imperative because of the problems of distributing available food supplies as equitably and as nearly in relation to need as possible and because of the necessity for maintaining industrial and other workers at the peak of production and good health.

For these reasons, the public must become better educated in the principles of nutrition. This should not be too difficult. People are properly interested in their own health. This is well indicated by the former popularity of patent medicines and by the present enthusiasm for vitamins.

Undoubtedly there is reason for condemning unrestrained promotion of vitamins and mis-use of scientific knowledge. Yet, if instead of summarily dismissing all popular promotion of vitamins or minerals as absurd or unnecessary, members of the dental, medical, and allied health professions would take cognizance of the vast numbers of diets which are below standard, and would then actively support the nutritionists who are promoting improvement in diets, real advance in health could be made.

Furtherance of good nutrition needs constructive aids in its struggle to get its proper recognition and place in the health professions. It is having the same difficulties defying average opinion and thought as, for example, other biologic phases had so recently in getting recognition alongside the firmly entrenched mechanical and restorative emphasis in dentistry.

Education in nutrition is not simply a matter of urging the consumer to follow particular dietary practices. It is also necessary to spread knowledge of nutrition throughout the whole community so that it may influence governmental action and all who are in a position to influence the consumer in his choice of food.

[1] *J. Periodont.* 16(1):21-23. Jan. 1945.

Dentists and physicians are respected leaders in their communities, and as such, should become aware of the impact of nutrition upon every aspect of practice and health, of the need for being informed about modern nutrition, and of the importance of contributing to the dissemination of present knowledge as well as actively assisting in bringing about recommended changes in food selection.

Such influence is vital to bringing about reforms in food habits, for we know that it is not enough to teach facts. The manner of teaching is important if we are to accomplish the changes in food habits we believe necessary. Studies have indicated that,

> Knowledge of subject matter does not necessarily bring about concomitant changes in the habit upon which this knowledge bears. However, it seems reasonable to assume that knowledge can be made to serve as one of the many facets in the modification of habits. Further, the process of changing food habits generally involves breaking undesirable positive food habits, which are firmly rooted in the psychological behavior pattern of individuals and in the cultural patterns of their nativity groups. After the old habit has been loosened, the new desirable habit must be established. This characteristic makes the process of changing food habits especially difficult, because it entails breaking well established habits, a process more difficult than that of establishing new habits, or strengthening poorly developed habits.
>
> In considering the psychological forces that control food habits, recognition must be given not only to the tastes and attitudes of the particular individual but also to the psychology of the "gatekeeper" governing the channels through which food comes to the table. In other words, the attitudes of the mother (or other person in charge of the food planning at home), towards the health values of foods, status values, money values and taste values, in large measure determine the food patterns of the members of the family.
>
> The cultural influences operative in the American food pattern are varied and complex. (Leah Gold, Nat. Res. Council, Comm. on Food Habits, 1944).

In spite of the varied forces controlling food consumption, education in nutrition is fundamental to bringing about the desired changes. With this in mind, the experts who wrote the Report of the United Nations Conference on Food and Agriculture (1943) stated that in the general instruction of the community, emphasis should be laid on certain simple ideas and subjects, as follows:

1. Food is important for health. The physiological requirements for health can be met only by selection of the right foods.
2. Foods differ widely in their composition but can be roughly divided into certain main groups, each of which includes foods of approximately similar nutritive value. By proper selection of foods from these groups, nutritional requirements can be met.
3. Families and individuals have the responsibility for making the best use of foods and food resources available to them. Rural families dependent upon food which they themselves produce should be taught to produce the kinds and amounts of food required for a balanced diet.
4. Methods of processing, conservation, distribution, and cooking, influence the nutritive content of food. Housewives should be taught methods of preservation and cooking which tend to preserve nutritive content and help to make the diet more varied and attractive. (Pub. No. 1948, p. 46, 1943).

Those persons who logically will be turned to by the public for dietary advice or opinion should be well and properly informed concerning dietary standards. Fortunately the table of recommended allowances for known essential nutrients as drawn up by the National Research Council of the United States (composed of experts in the various fields of bio-chemistry and nutrition) in 1942, although stated in grams, milligrams, and units, can be readily translated into terms of

foods in common use or availability. These foods can be grouped into broad categories or classes from which a satisfactory daily diet may be readily chosen.

These classes of foods with their more outstanding contributions to the diet are as follows:

MEAT, FISH OR POULTRY: Excellent sources of high-grade protein and certain vitamins, especially of the B-group.

MILK: An economical form of high-quality protein. The only rich source of calcium. Without milk, it is extremely difficult to supply the daily quota of ribo-flavin and calcium.

EGGS: High-quality protein, iron, and vitamin A.

FATS AND OILS: Concentrated sources of food-energy, yielding about twice as many calories per pound as either protein or carbohydrates. They add flavor and satiety value to diets. Certain ones carry important amounts of vitamins A and D.

VEGETABLES AND FRUITS: These vary widely and may be subdivided:

1. Vitamin-C-rich fruits: citrus fruits and tomatoes.
2. Leafy green and bright yellow vegetables and yellow fruits: Important for pro-vitamin A.
3. Potato: Important for energy, vitamin C, and minerals.
4. Legumes and nuts: Useful especially for protein and B-vitamins.
5. Other fruits and vegetables.

GRAIN PRODUCTS OR CEREAL FOODS: Inexpensive sources of energy. Enriched products and whole-grain are good sources of iron and B-vitamins. When germinated, grains contain vitamin C.

Using these food-classes as a basis, the following recommendations for daily consumption have been made:

MEAT, FISH OR POULTRY: *1 serving (3-4 oz.)* Substitution of legumes or extra milk and eggs may be made once or twice a week, as the main protein source.

MILK: *2 cups (one pint)*, preferably 3 or 4.

EGGS: *1 daily*, at least 5 a week.

FATS AND OILS: Include at least *2 tablespoons of butter* or vitamin-enriched oleomargarine.

VEGETABLES AND FRUITS: *5 servings*, about ½ cup each, and distributed as follows:
1 serving of vitamin-C-rich fruit, i.e., citrus fruit or tomato, fresh or canned.
1 serving of leafy, bright green or rich yellow vegetable or yellow fruit.
1 serving potato.
2 other servings of any fruit or vegetable.

GRAIN PRODUCTS OR CEREALS: *4-6 servings*, at least one-half in whole grain or enriched forms. This group includes bread, breakfast cereals, cakes, rice, noodles, macaroni or spaghetti.

SWEETS AND DESSERTS: In moderation. Desserts once a day, twice only when other recommended food-servings have already been included.

In addition to the above daily servings, it is advisable to use iodized salt regularly to meet the iodine requirement. Furthermore, the Report of the National Research Council states,

Vitamin D is undoubtedly necessary for older children and adults. When not available from sunshine, it should be provided probably up to the minimum amounts recommended for infants, which is 400 International Units.

As was noted in the description of food classes, it is extremely difficult to

supply each day's needs for riboflavin and calcium unless at least one pint of milk is included daily. There are no other rich sources of these nutrients in readily available foodstuffs, and yet, milk in sufficient quantity, is often lacking in the adult diet. The inadequate amount of calcium in the diet of the average adult is cited as the most likely explanation of the population-wide progressive demineralization without the appearance of true osteomalacia (*J.A.M.A.* 112: 434, 1939), and research would seem to confirm this statement. Not only is the average human diet without milk not a good source of calcium, but the percentage of calcium retained from other foods is less than in the same diet with added milk even with equivalent calcium and phosphorous (*J. Hygiene* 39:91, 1939). In addition to the minerals, milk furnishes more of the other known essential nutrients than any other single food.

Another plausible explanation of demineralization of the skeleton in adults may be the lack of sufficient vitamin D to make available most effectively the calcium which is present in the food. Results of numerous animal experiments have indicated the significance of vitamin D in this respect.

It is not enough to choose the appropriate kinds of foods daily, it is essential to have servings in each instance which are sufficiently large to fill the special needs of the individual according to his age, activity, or special requirements. The diet-pattern and quantities recommended herein will provide those amounts of essential nutrients insuring a high level of health for adults, in so far as it can be insured by diet, except as regards calories. The basic pattern provides approximately 1300 to 1800 calories, depending upon the choice of foods. Sedentary women should have 2100 calories, moderately active, 2500, and very active 3000; while sedentary men need 2500, moderately active, 3000, and very active 4500 calories. The difference between the basic pattern provision and total caloric needs will usually be provided by the popular foods such as desserts, candy, extra breads and beverages. For most people, great care must be taken to prevent these foods from supplying too many of the day's calories, thereby satisfying the appetite and energy requirement, but usurping the place of those foods which are needed to supply the essential nutrients. It is a good rule to eat first what one should and then what one wants. It takes definite thought, care and planning to eat properly, it cannot be done by appetite or whim.

Not only is it wise to eat certain foods daily, but present knowledge emphasizes the desirability of distributing one's food intake more evenly over the traditional three meals daily. Thus, a substantial breakfast should be eaten. There is evidence that better work can be done in the morning by those who have eaten well, while fatigue is likewise lessened. The orange juice-coffee breakfast is not satisfactory; instead breakfast food or egg, toast and milk should be added. The lack of morning appetite so frequently given as the excuse for skipping breakfast can be overcome by retraining and the establishment of new habits. Proper attention to the right breakfast and lunch will bring most adult diets up to the recommended standards.

With proper education and motivation, people will eventually become more aware of the importance of better food habits. Furthermore, they will find that complications in diet are reduced by use of simple food rules.

(Continued in the July, 1945 issue)

In Our Opinion

WHAT DRUGS ARE USEFUL IN PERIODONTIA PRACTICE?

Initial Statement

By HAROLD J. LEONARD, D.D.S., B.A., *New York, N. Y.*

BECAUSE dentists have not understood the normal and pathologic physiology of the gingival tissues and especially the physiology of their healing, there has been and still is an unjustified reliance placed on drugs in periodontia practice. Drugs have been used locally as general and special bactericides and bacteriostats, astringents, tissue stimulants, oxidizing agents, calculus removers, epithelium solvents, and cauterants to remove gingival flaps. Systemically they have been used mostly as general and specific bacteriostats, more recently to alter the cell and vascular metabolism. There are some uses for drugs in anesthetizing very sore areas during treatment, cleaning out debris in acute Vincent's cases, desensitizing hypersensitive tooth surfaces and neutralizing acidic areas around the teeth. These uses while valuable, do not contribute much to counteract the fundamental disease process in periodontoclasia. With few exceptions drugs have little to offer in restoring diseased gingival tissues to health. Nevertheless it is necessary from time to time to review the use of drugs in periodontia in the light of our modern conceptions of gingivitis, periodontoclasia, and Vincent's infection and their treatment.

Periodontoclasia is essentionally an inflammation of the marginal and cemental gingiva due to irritating deposits of salivary constituents, bacteria, fungi, decomposing exudate, and food debris and to calcific nodules which form in these masses. The inflammation induced by these irritating substances is the mechanism by which capillary stasis, local anoxemia, cell degeneration, connective tissue dissolution, and bone absorption are brought about. The process is modified by the amount and composition of the saliva and by oral hygiene procedures which influence the accumulation of deposits on the tooth surfaces, by the chemistry of the body which affects resistance to irritating and toxic substances, and by the local tissue tone which is kept high by function whether masticatory or massage, or made low by lack of function or by traumatic injuries from faulty occlusion. The treatment consists in removing the irritating deposits on the tooth surfaces and in breaking up the inflammation and its sequelae by massage. Adjuvant treatments are systemic therapy to increase general tissue resistance and restorative dental procedures to decrease traumatic injuries. In these physiological and mechanical objectives, there is but little room for drugs.

The microörganisms in the deposits on the tooth surface that cause the inflammation of gingivitis and periodontoclasia consist mostly of saprophytic bacteria and fungi. *Streptococcus viridans* is a secondary invader that penetrates deeply into chronically inflamed degenerated tissue, but it does not seem to be

an active cause of disease. It soon disappears when the deposits are removed from the tooth surface and the circulation is restored by massage.

Systemically applied drugs designed to kill bacteria or inhibit their growth in periodontal pockets must be built up in such a concentration in the blood that the fluid exudate bathing the deposit in the pocket is sufficiently rich in drug to be effective on the bacteria and fungi in the deposit. Probably a higher blood level is needed than for bacteria actually in the tissue. At any rate the drugs so far tried for this purpose starting with mercurials, and running through emetin, arsenicals, vaccines, sulfonamides, and penicillin have been ineffective with the possible exception of penicillin. This latter drug according to Strock (*J.A.D.A.* 31(17):12-35. Sept. 1944) when used in sufficient concentration over a long enough period is effective in bringing inflamed gingivae back to health. Such use is impractical at present owing to the expense of the drug, the difficulty of obtaining it, and the fact that health can as easily be brought about by other methods which are available. With the exception of penicillin all of the drugs sometimes have disagreeable and dangerous reactions which contraindicate their use excepting for serious illness and under a physician's care.

The local use of bactericidal or bacteriostatic drugs in periodontia cases has on the whole been unsatisfactory except where the disease is superficial as in acute Vincent's gingivitis. In this latter disease fresh arsphenamine applied to the ulcerated surfaces is sometimes effective. Bacteriostatic dyes, like gentian violet, or acriflavin, or a combination called acriviolet, are also used with some benefit while penicillin held in the mouth for hours is very effective according to Strock. A combination treatment of J. F. Adams of Toronto consisting of Churchill's tincture of iodine flooded into the necrotic membranes of the ulcers, followed by 35 per cent silver nitrate has proved very effective according to H. K. Box (booklet, *Necrotic Gingivitis*, 1930) in treating acute Vincent's gingivitis.

Half strength fresh hydrogen peroxide (1½%), saturated sodium perborate (3%), or a solution made of equal parts of fresh hydrogen peroxide and 1 to 1000 mercury bichloride solution are most effective in treating acute Vincent's disease. All of these drugs appear to act as cleansing agents, the oxygen gas liberated by contact of the peroxide with the catalase of tissue fluid in the raw ulcer, tending to lift off necrotic and exudative debris and bacteria and leave a clean ulcer surface. The antibacterial action of these drugs is apparently unimportant as certainly all bacteria are not immediately killed by the application. However, the hydrogen peroxide-mercury bichloride mixture appears to be somewhat more effective than hydrogen peroxide alone. Sodium perborate is much used and is effective but is disagreeable in taste and causes burns in some individuals which makes it a less desirable agent than the hydrogen peroxide solutions.

M. L. Rhein, (*D. Cosmos*, 1893), tried using strong hydrogen peroxide solutions (5%) for injecting into periodontal pockets. This idea was carried further by W. F. Dunlop (*D. Cosmos*, 1914) who injected oxygen gases under pressure containing ethyl borate solution as a spray, into periodontal pockets. Recently, B. Orban (*J. Periodont.* 14(1):37-44. Jan. 1943) has advocated the

use of even stronger oxidizing solutions such as neutralized superoxol (30% hydrogen peroxide neutralized with sodium bicarbonate). Orban has demonstrated the beneficial and non-injurious effects of such oxygenation of chronically inflamed gingival tissues by histologic and clinical studies. By repeated applications over a period of several weeks, the inflammatory signs disappear and vigorous healthy gingival tissues remain. The objections to this treatment are that it takes more time on the part of the dentist and more time for recovery than treatment by home care massage. The treatment is directed at one symptom, namely, local anoxemia instead of the basic fault in chronically inflamed tissue which is capillary permeability and stoppage. Compression and release massage of marginal and cemental gingiva acts directly to relieve the capillary stasis. The end results of treatment by massage seem to be equally good and much more quickly and easily attained.

Astringent drugs have been used to shrink down swollen edematous gingival tissues from very early times. Starting with nut galls (tannic acid), tannins, hypertonic salt solution and metallic salts have been used. The action of astringents is a visible contraction of the tissue, blanching and wrinkling of mucous membranes with diminished oxidation. According to Sollman *(Manual of Pharmacology)* "the effects are probably due to precipitation and hardening of the cell surface and cement substance of the capillary epithelium, producing contraction and decreasing permeability of the capillaries, and thus counteracting the essential phenomena of inflammation (congestion and exudation)". Zinc chloride (8%) is probably the present choice of astringent drugs. While this and similar drugs have their use for reducing gingival seepage during operative procedures they have been discarded for treatment of periodontal inflammations by most periodontists. Their action is superficial and temporary, and they do some damage to tissue cells. Where thorough root surface cleansing is done and the patient is taught effective gingival massage, there is no additional benefit from astringents or hypertonic salt solution.

Escharotic drugs are used to destroy the gingiva overlying periodontal pockets and thus take the place of surgical resection. Drugs of this type are strong silver nitrate solutions, chromic acid, trichloracetic acid, sulphuric acid, phenol sulphonic acid, copper sulphate, and paraform. The chief disadvantage of the use of caustic drugs as against surgical resection is that the action is not as controlled and accurate. If the flap to be destroyed is deep, several applications may be necessary. If the drug reaches the base of the pocket, further destruction and loss of attachment occurs. Surgery is accurate and complete at one sitting while soreness and growth of granulations can be controlled by the use of surgical dressing. The use of escharotics like the use of electro-coagulation appears to be much less satisfactory than surgery but may be indicated for patients who are prejudiced against the latter.

The use of acids either as escharotics or as calculus softeners has been pretty well discontinued because of their solvent action on cementum. Exposed dentine becomes hypersensitive in the presence of acid.

The use of sodium sulphide solution as a means of removing the epithelial lining of the pocket was introduced by McCall *(D. Items of Int.* 1926). Since

this epithelium is interposed between the cementum and connective tissue elements that might conceivably reform periodontal membrane, new cementum layers and new alveolar bone, its removal is theroretically indicated. F. E. Beube *(J. Periodont.* 10(1):49-56. Jan. 1939) has shown however, that the action of McCall's sodium sulphide solution is essentially that of sodium hydroxide, a destroyer of both epithelial and connective tissue. Thicker parts of epithelium are not destroyed throughout while some connective tissue at the pocket base is destroyed to cause deepening of the pocket. Carefully controlled clinical tests showed no benefit from its use.

Drugs to stimulate increased blood circulation in the gingiva by local irritant action have not been helpful. The gingiva does not respond by reddening upon application of local irritants to nerve endings as does the skin. Menthol and similar drugs applied topically or rubbed in have been of no benefit.

Although drugs have been of but little aid in the fundamental treatment of the periodontal diseases, there are several which are useful in periodontia practice. These include desensitizers of dentine, local anesthetics, the surgical dressing to be used following gingival resection, and several drugs for treatment of soft tissue lesions of the mouth.

Hypersensitive root surfaces are due first to the fact that dentin has become exposed and second to what appears to be a fact that such exposed dentin has been subjected to acid, usually the acid from fermenting carbohydrates on the teeth or from the secretion of the buccal glands. If such tooth surfaces are alkalinized by sodium bicarbonate left as a coating on them at night, they become less sensitive and may require no other treatment. In other cases the hypersensitivity is so acute that complete desensitization is indicated. Rubbing in of silver nitrate (pulverized crystals) to the wet tooth surface followed by eugenol to precipitate the excess is fairly effective but causes blackening of the tooth surface. Formalin (40% formaldehyde) and zinc chloride (10%) rubbed or burnished into the sensitive areas are even more effective but being liquid are more difficult to keep from touching and cauterizing the gingiva. A treatment invented by W. H. Hoyt and B. G. Bibby (*J.A.D.A.* 1943) consists in the use of a dilute sodium fluoride solution and concentrated paste which are rubbed into the sensitive areas. The fluoride paste is easy to control and does not appear to injure the gingiva if it gets on it. The treatment is effective and without the bad side effects of the other agents.

Local anesthetics have an occasional use in periodontia practice. In most cases conservative root surface treatment can be rendered without sufficient discomfort to require the use of a local anesthetic. In some patients the periodontal tissues are abnormally sensitive especially where pockets are deep. In these cases a procain local anesthesia may well be indicated. It is of course also indicated where surgical resection is to be done. Topical anesthetics like ethyl aminobenzoate introduced into pockets prior to instrumentation have not proved particularly helpful.

In 1928 A. W. Ward *(J.A.D.A.)* introduced his surgical pack, a secret formula preparation of powder and liquid which, mixed like cement, was applied to the cut gingival margins and exposed root surfaces following surgical resection. Agents with similar and improved properties have been devised since then

(Merritt, Arthur H. *Periodontal Diseases,* Ed. 1939) composed chiefly of liquid eugenol and olive oil and powder compounded of zinc oxide, magnesium oxide, and resin. The material is elastic and if well locked in place by joining the buccal and lingual masses through the interproximal spaces, it may be retained for a week or two. It almost completely eliminates the pain and soreness which would normally follow cutting and exposure of connective tissue and bone, until epithelium has covered the wounds.

Soft tissue lesions of the mouth are coming more and more to be considered in the field of periodontology. Certainly their therapy falls naturally into no other division of dentistry and so must be considered here.

For mouth odors, aromatic chlorazene[1], a chloramine preparation with the chlorine taste masked by other ingredients, freshly dissolved to about two per cent solution, is most effective. Breath odors coming from diseased nose, throat, or lungs or expired gases are of course not affected.

The treatment of ulcerations of the mucous membrane depends on the cause of the ulceration so far as causes have been demonstrated. Some are known to be local infections with virus or bacteria, while others are local manifestations of systemic disease acting through local neurovascular disturbance, changes in tissue chemistry with local manifestations or changes due to lack of leukocytes. Many are allergic manifestations. In the case of local ulcerations due to systemic affections, the constitutional condition needs the treatment of a physician while the local treatment of the ulcers is palliative and preventive of secondary infection.

Acute aphthae (canker sores) and chronic aphthae (Mikulioz's aphthae) are best treated by the application of 95 per cent phenol touched to the ulcer followed in the thirty seconds by alcohol sponged on until the white coagulum formed by the phenol has disappeared. Alum styptic pencil applied to the lesion is also much used. These aphthae are apparently often manifestations of food allergy. If they recur persistently, appropriate tests and allergy treatment are indicated.

Herpes labialis simplex (cold sores and fever blisters) are due to infection by a filterable virus which attacks during periods of lowered resistance resulting from illness or stress. Prinz and Greenbaum *(Diseases of the Mouth and Their Treatment,* 1939) recommend an astringent lotion composed of zinc sulphate-potassium sulphate (4% each) applied to dry up the lesions before they have become crusted. Ziskin (personal communication) recommends covering with collodion to protect from drying and external irritation. Camphor preparations as spirits of camphor, camphorated phenol or camphor ice seem to be helpful.

Where painful lesions exist whether herpetic ulcers or tuberculous lesions, X-ray therapy is indicated. This is beneficial not only for the pain but also for the infection.

Desquamative lesions of the mouth are due to endocrine imbalances according to Ziskin. Either the estrogenic hormone or in males, testosterone is deficient. If other effects indicate the need for it, systemic therapy should be supplied by physician. Ziskin *(J. D. Res.* 1942; *J. Periodont.* 16(1):7-15, Jan. 1945) has been able to cure these lesions by applications of ointment containing the required hormone, held in contact for considerable periods in daily treatments by means of a specially made dental tray.

[1] (Abbott)

Burning sensations of tongue (glossodynia) or areas of the mouth (stomatadynia) may be due to some form of anemia, hypoacidity, diabetes, or hysteria. There does not appear to be any local treatment indicated nor have thiamin or endocrine hormone proved of any avail in cases due to these causes. J. B. Costen (*J.A.M.A.*, 1936) has found temporo-mandibular joint defects in many cases and claims to have given relief by reëstablishing occlusion and vertical dimension. Burning tongue is a regular symptom of Moeller's or Hunter's glossitis which is an atrophic lesion of the mucosa of the tongue due to a pernicious type of anemia. There is some evidence to indicate that it is due to a deficiency of one or more of the B group of vitamins. Rowe (*Elimination Diets and Patients Allergies*, 1944) finds many cases in which burning tongue is due to allergy, usually food allergy. There is no local treatment of value.

One of the common symptoms of agranulocytosis is the presence of ulcerated necrotic patches of the mucous membrane of the mouth which usually involve the underlying structures to the bone. The local treatment is anti-Vincent's medication with the object of keeping bacterial infection to the minimum while systemic therapy is introduced to overcome the blood deficiency.

A similar treatment is given for the mouth lesions of lymphatic and myologenous leukemia and infectious mononucleosis. Half strength hydrogen peroxide flushed for sixty seconds throughout the mouth cleanses the mouth of blood and exudate on which microörganisms might otherwise gain a dangerous ascendency. Gentian violet is a non-irritating and penetrating bacteriostatic agent which is not quickly washed away. It may well be applied to ulcerated surfaces after cleansing with hydrogen peroxide.

Several fungus and yeast microörganisms may cause disturbance in the mouth. Thrush due to *Monilia albicans* is a disease occurring on the mucous membrane of debilitated children. Boric acid wash and boric acid ointment are the local treatments of choice for this infection.

Sulphanilamide or sulphapyridine systemically administered appear to be the choice of treatment for actinomycosis.

Several other blastomycete and fungus infections (sporotrichosis) of the soft tissues of the mouth occur infrequently. Iodides administered internally are regarded as a specific for all of these.

For pemphigus, leukoplakia, and lichen rubor planus no medications either local or systemic are known to be of value. In pemphigus, treatment is chiefly designed to prevent infection and relieve pain. In leukoplakia the chief reliance is on finding the systemic or local cause of mucous membrane irritation and removing it before the lesion becomes cancerous. Lichen rubor planus is ordinarily not a troublesome or dangerous disease and usually disappears in time by itself.

For traumatic, neurotrophic ulcers and those due to drugs, the offending cause is eliminated and the ulcers treated with gentian violet for antisepsis followed by compound tincture of benzoin as a protective soothing agent.

The treatment of oral tuberculosis and lupus erythematosus is systemic with locally applied radiant energy. Locally applied drugs have little use.

Diseases due to avitaminosis such as scurvy, cheilosis, and pellagra are of course treated by administration of the appropriate vitamin; ascorbic acid or

ascorbic acid containing foods (lemons, oranges, tomatoes) in the case of scurvy; riboflavin and riboflavin containing foods (liver, yeast, cheese, eggs) in the case of cheilosis; niacin and niacin containing foods (liver, muscle meat, yeast) in the case of pellagra. There is some evidence that susceptibility to Vincent's infection is in many cases associated with niacin deficiency and can be benefitted by niacin 150 mg. daily administration. Niacin amide may be used instead of niacin if the acid causes an unpleasant vasodilatation reaction.

Dry mouth due to deficiency of saliva (xerostomia) is a troublesome condition in fever and in certain diseased states of salivary glands or nervous system. It also occurs in severe Vitamin A deficiency. When the condition is prolonged and severe, the teeth may be affected with rampant caries and the mucous membrane of the mouth may become cracked and infected. White petrolatum coated over the mucous membrane is very helpful in these cases to prevent further dehydration. Lemon juice compounded in equal parts with the petrolatum recommended by Dr. I. J. Sperber of New York tends to cut the sticky mucous and is very much appreciated by feverish patients or others with dry mouths. If open fissures are present, the petrolatum alone is used.

For dry, cracked, chapped lips some oily preparation is indicated to prevent further drying. Cold cream, lanolin, petrolatum album or cocoa butter may be used for this.

Cracks and redness at the angles of the mouth may be due to ariboflavinosis, to fungus infections which occur in adults when the lips overlap due to decrease in vertical dimension (pseudocheilosis), or to contagious fungus infections of childhood (perlèche). Rowe *(loc. cit.)* says that perlèche is often an allergic manifestation. The fungus infections like those in the mouth are treated with boric acid solution and boric acid ointment. In the case of adults with overlapping lips, the mechanical defect is corrected with dental appliances to restore proper vertical dimension.

There are of course many other non-surgical diseases of the mouth in which at least a tentative diagnosis should be made by the periodontist. The treatment for most of these is systemic and is a matter for the patient's physician or special consultant. The foregoing local treatments are those generally preferred and found useful for diseases which come within the dentist's province to treat. It is to be hoped that some of the discussors will have had special experience with some of these non-surgical lesions of the mouth by which they can add valuable data on therapy.

DISCUSSION

J. LEWIS BLASS, PH.G., D.D.S.
New York, N. Y.

The opening paragraphs of the Initial Statement present the status of drug use and misuse in periodontal treatment in a fair manner. It might be well to point out that while drugs may be regarded as unimportant in the therapeutics of periodontal treatment their use still represents a valuable adjunct to mechanical therapy.

The use of Solution Zephiran 1:8000 is an aid in cases complicated by the presence of mucinous placques holding microörganisms and higher bacteria. The drug is a bactericide and is apparently harmless to the oral mucosa. It is prepared for use by diluting one ounce of the 1:1000 stock solution with seven ounces of water and is used as a mouthwash as often as six times daily if necessary.

The combination of ethyl aminobenzoate with phenol and oil of peppermint to render the first drug soluble in a non-alcoholic solvent seems to be more effective as a soft tissue anesthetic than other solutions of ethyl aminobenzoate. The formula (Blass, *J.A.D.A.* Feb. 1943) is as follows:

℞ Benzocaine	7.5
Oil of peppermint	6.0
Phenol crystals	3.5
Ethylene glycol q.s.	50.0

Mix the benzocaine, oil of peppermint and phenol crystals in a flask and heat until the solution of the benzocaine is effected. Add enough ethylene glycol to make 50 cc.

Acute aphthae and herpes simplex are usually desensitized and eliminated by one application of Adam's treatment—Churchill's iodine followed by silver nitrate solution, 35 per cent.

In 1940, Box *(J.C.D.A.* December) advised the use of sodium oleate in a dentifrice "where special protection of the tooth surface against acid attack is indicated, as, for example, in enamel surface defects such as chemico-abrasion, and in extreme cases of susceptibility to dental caries." He ascribes the following properties to the solution:

"This solution is detergent and is absorbed on the tooth surface as a film of sodium oleate. This apparently undergoes dissociation in the human saliva, leaving on the tooth an extremely thin coating of oleic acid."

A sodium oleate dentifrice (modified N.F.) is as follows:

℞ Sodium oleate	6.0
Saccharin	0.2
Oil of clove	1.0
Oil of cassia	0.5
Oil of peppermint	0.5
Alcohol	50.0
Glycerin	25.0
Water q.s.	100.0

Sig. Use ten drops full strength on a dry brush as a dentifrice.

This dentifrice has been found useful in relieving widespread occlusal and cervical sensitiveness and obviates the necessity for any treatment of individual teeth.

Irrigation with hot water (Blass, *J.A.D.A.* Feb. 1943) is used in any stage of necrotic gingivitis, and in catarrhal stomatitis, parodontal abscess and acute gingival and oral infections. The last named are treated symptomatically. In these cases, attention is also directed toward the elimination of the temperature rise and the anorexia by administering a saline laxative or cathartic. A bland, non-irritating diet rich in diluted fruit juices, cooked vegetables, and milk is prescribed, as in necrotic gingivitis. The non-specific microörganisms, destroyed soft tissue, and food debris are removed by hot water irrigation used every three to four hours, or as often as every half-hour if the severity of the infection demands it.

The greatest and most rapid improvement is made when the patient is taught the use of water sufficiently hot, and if he employs the method properly at home. For this purpose, a fountain syringe hung 2 feet above the level of the head as it is inclined over a wash basin is employed. A glass medicine dropper is placed at the end of the tubing. Two quarts of water, as warm as can be tolerated by the patient (usually 115° F.) is placed in the container, and one tablespoonful of salt and, if desired, an equal amount of sodium bicarbonate are dissolved therein. The solution is then allowed to flow into all parts of the mouth.

To protect the patient from burns and, on the other hand, to insure the application of a sufficiently high degree of heat, it is advisable to demonstrate the procedure in the office. This is done by the use of a fountain syringe that has a Becton-Dickinson infusion thermometer inserted as a connecting tube between two parts of the rubber tubing attached to the syringe. The temperature of the water, as indicated by the thermometer, can be tested so that, by the addition of either hot or cold water, the desired temperature of 115° is reached.

Rinsing alone is valueless, since water from a drinking glass touching the lips cannot be used so hot as can be tolerated by the mucosa.

Local heat treatment increases local blood and lymph circulation and local tissue metabolism. It promotes resorption of products of inflammation, permits restoration to normal function and relieves pain. This effect is brought about by dilation of the blood vessels, thereby promoting better peripheral blood flow and causing a more rapid exchange of metabolic products between the blood and cells. The hot water irrigator offers an excellent means of assuring these desirable effects.

BERNARD S. CHAIKIN, D.M.D.
Boston, Massachusetts

In my private practice, we use no drugs whatever in the treatment of periodontoclasia with the exception of topical anesthetics, local anesthetics, and the same surgical packs as you have mentioned. Our method of choice is the so-called conservative type of treatment with surgery playing only a minor role.

For Vincent's infection, we use the dyes; namely, methylene blue, gentian violet and acriviolet. Bland mouth washes such as milk of magnesia and normal saline solutions are used very frequently, the purpose being to constantly keep the interdental spaces well flushed. We feel that the mechanical flushing is more important than the medicinal value of the drugs in the topical applications and washes. Dyes seem to have a slight anesthetic action thus relieving the pain associated with the acute stage of this disease.

For a general build up of tissue resistance, we try to prescribe well-balanced diets, with special attention paid to high vitamin content foods such as fresh raw vegetables, citrus fruit juices; and alkaline ash producing foods.

F. D. FRANCIS, D.D.S.
Iowa City, Iowa

For reasons not too difficult to understand, treatment of periodontia cases in our infirmary has been more or less standardized. This is true for gingivitis cases with their peculiar etiology as well as for periodontoclasia cases whose etiology is varied and not understood. The arrival at standardization has been evolutionary and is rationalized on the basis of fundamental concepts of what is required and how it is to be accomplished. If any defense is necessary, it may be pointed out that the method is flexible, aims at early understanding by the student of the problems involved and at early acquisition of a basic technic which can be modified, expanded, and experimented with after he enters practice. Therefore, our discussion of the subject as outlined by Dr. Leonard, will be qualified to conform to our clinical teaching practices in which we employ drugs secondarily and by which we attempt to develop primarily the basic principle of elimination of cause, dissipation of effect, and maintenance of hygiene. This end is best accomplished by working with Nature instead of independently. Nature with her defensive mechanisms through the agency of early inflammation and her regenerative and reparative mechanisms of late inflammation, has been on the job for some little time before a dentist sees these cases. Therefore, if we are to be of any assistance, we must discover what she is trying to do and then follow her lead. Clinical and experimental evidence indicates that Nature is trying to remove injurious agents, neutralize toxins, dispose of tissue debris and heal by regeneration or repair or both. Our contribution then, consists in removing irritating and injurious agents such as calculus, overhanging margins of fillings, bacteria and their products—pus and toxins, stimulation of cell activity, and promotion of circulation of blood and lymph by massage, practically all of which is accomplished by physical means.

There is no gainsaying that drugs are valuable if not actually indispensable in controlling infection, cleaning up tissues and stimulating tissue activity. However, a given drug does not unfailingly produce identical results in all individuals or in the same individual at different times. Moreover, drugs to exert their specific effect must not be indifferently applied. Technic of application of a drug is so fundamental as to merit more consideration than the drug itself, for other drugs in its class may be used with equally good results if the technic of application be correct. A germicide must *reach* the organism it is intended to destroy; an antiseptic must *reach* the toxin it is intended to neutralize and, blood must *reach* the tissues which are to be rebuilt and kept on a high level of health—all of this based upon the assumption that there be no avitaminosis, no endocrine imbalance or failure, and no starvation. Any one of these disturbances may, and all of them together almost certainly do retard if they do not entirely prevent the complete restoration which we hope to bring about by drugs and instrumentation.

We have found that infective gingivitis cases, acute and chronic, respond satisfactorily to the following management; ten per cent chromic acid pumped to the bottom and completely flooding all pockets and crevices[1], then sprayed lightly with hydrogen peroxide q. s. to completely oxidize the

[1] [sulci]

acid. Rinse the mouth and pump ten per cent mercurochrome to the bottom of all pockets and crevices. The secret of the success in this drug procedure certainly does not reside in the particular drugs. On the contrary, it resides in the cleaning out of the pockets so thoroughly that a germicide can reach and penetrate the vital tissues within the pockets and contact the organisms therein. Even this fails when the intervals between treatments are greater than 24 hours and when fewer than three applications are made. And still again, if mechanical irritations are not eliminated immediately upon gaining control of infection, failure is probable. With all of these measures carefully observed and treatment apparently successful, recurrence so early as to amount to chronicity is probable, when the patient omits his part of the program—oral hygiene. Apropos hygiene, dentifrices and mouth washes which may be classified as drugs can never replace mechanical cleansing and massaging. Reduced to lowest terms, this is a job for elbow grease and bristles mixed with muscle, intelligently applied! Infectious gingivitis is many times complicated by fungus. Most of these cases can be simplified by the addition of copper sulfate to a compatible mouth wash q.s.ad. 1/1000. Where this proves inadequate packing the interproximal pockets and crevices with the powdered crystals or the anhydrous powder on small moistened cotton pledgets left in contact three minutes is recommended. Omit none of the pockets or crevices. Here again, it is not the particular drug but the skillful application of a fungicide where the fungus resides. These treatments must be followed immediately and in the prescribed manner by the chromic acid-hydrogen peroxide-mercurochrome or equivalent medication.

Our periodontal cases with pockets are routinely subjected to cauterization by a saturated solution of iodine in creosote pumped to the bottom of the pockets. Instrumentation follows immediately. The drug is germicidal, destroys or at least dilutes toxins, coagulates pocket debris rendering it subject to mechanical removal, loosens the keratinized pocket epithelium so that it can be replaced by younger and healthier tissue and stimulates the local physiology. Instrumentation removes the mechanical irritants and thus the stage is set for the inflammatory reactions essential to improvement. With adequate blood supply of normal quality the inflammation quickly passes through the initial stages to the late stages characterized by healing. The end result is closure of the pockets by constriction of a degree to exclude foreign matter so that the residual pocket contents are subject to physiological scavenging. Cases capable of responding to this degree can be treated without drug medication, but drugs facilitate and accelerate the responses. Cases which fail to make a good response indicate failure in technic, failure in quality of the patient's blood or both. Scarcely can the drug employed be blamed unless it be purely an experiment in the use of some untried agent.

Saturated aqueous trichloracetic acid is ideal for canker sores when employed with the following technic: convey the smallest possible amount on the end of a bare metal applicator to the center of the undried ulcer (normal salivary film), holding light contact until whitish coagulum spreads to and includes the margin, then lift applicator. Here again, any drug of this class will produce identical results, but certain characteristics of this acid such as ease of control, transport by surface tension of saliva and its positive self limiting action make it outstanding. One treatment usually suffices but others are not contraindicated. Such treatment is palliative only and in no sense a cure.

Mouth washes while composed of drugs can scarcely be classed with specific agents. We employ them in conjunction with treatment at the chair, and as part of the home care; we discontinue them as early as possible. Their chief role is to maintain ground gained at the chair until successive treatments and home care can bring a disturbance under control. They fail in this, however, when treatment intervals are too great.

In summary, we feel that too much dependence should not be placed on drugs, but drugs used as adjuvants are valuable and dependable.

M. H. GARVIN, D.D.S.,
Winnipeg, Canada

In discussing the question of what drugs are useful in periodontal practice, I agree with Dr. Leonard that with few exceptions

drugs have little to offer in restoring diseased gingival tissues to health. In a sentence, my practice has been, and is, to remove the infection by curettement or by gingivectomy and then to keep the tissues healthy by inter-dental stimulation.

For treating Vincent's infection, I have used the arsenicals, several of the aniline dyes, silver nitrate and iodine and other medicaments but as a rule prefer 10% chromic acid, usually followed by the application of pure oxygen from the Dunlop machine. If the exposed necks of the teeth are particularly sensitive whether due to Vincent's, gingivectomy or any other cause, I use silver nitrate followed by iodine in the posterior region and would point out that even in the treatment of Vincent's infection I apply the silver nitrate first followed by the iodine since I prefer the action of the nitrate to the iodine, knowing full well that this is contrary to the widely accepted teaching of applying the iodine first.

When a patient presents himself because of bleeding gums due to gingivitis, the same treatment is used as for Vincent's infection as far as drugs are concerned. Of course, thorough scaling is of paramount importance.

Among the essential drugs is a surgical pack for use following gingivectomy, also some desensitizer such as formalin to use on sensitive root surfaces in the anterior part of the mouth where silver nitrate is prohibitive on account of the discoloration caused by its use. Topical anaesthetics and local anaesthetics are necessary and I have performed extensive gingivectomies under a general anaesthetic.

In my practice I have only had occasion to treat one case of actinomycosis. Many bacterial smears were examined but at no time was the ray-fungus found due to the fact that the disease was of four months duration before I first saw the patient. In these cases of long standing it should be remembered that it is not always possible to find the fungus under the microscope. The diagnosis was made entirely from the history and clinical picture and the condition cleared up in a short time under potassium iodide treatment.

In the case of leukoplakia, I have found that smearing the affected area frequently with petrolatum has proved of value.

WILLIAM BROWN INGERSOL, D.D.S.,
Washington, D. C.

Drugs are of course indispensable as an adjunct to periodontia but they seldom meet the fundamental need. Moreover, any one drug may have varying results with different patients and when administered by different practitioners. Nevertheless, there is untiring and never-ending search for new and effective remedies for the care of disease and the alleviation of human suffering. The findings necessitate frequent changes in our dental armamentarium as new drugs are constantly being discovered and as old ones become obsolete or as new methods of teaching and of administration replace old ones. But we need more agreement as to the scientific use of available drugs.

As a teacher and a practitioner in the healing art of periodontia, I am often perplexed as to the drugs on which I should place emphasis and which ones should be minimized. Each patient presents a distinct problem, and each must be studied carefully to take into consideration all health factors. It is generally agreed that patients with the same infectious disturbances react differently to the same drug—some react favorably while others have little or no reaction or even an unfavorable one. In short, no one drug is seldom available to us for universal use.

I am impressed with the opening paragraph in the Initial Statement which refers to the value of drugs. Drugs *are* valuable, but they contribute little to counteracting the fundamental disease process in periodontoclasia—to restoring to health diseased gingival tissue. Too many of us are erroneously under the impression that "Drug A" is the panacea for this particular condition, and "Drug B" a specific for that other dental ailment. They are often used without careful study of the basic need and with far from general agreement. For example, many treatments with strong irritating drugs are advocated by some in the treatment of Vincent's infection, whereas many others are advocating milder applications of less potent drugs to the mucous membrane and gingival tissues. These latter advocates are obtaining good results without destruction of tissue cells.

Every periodontist should be well versed in the value and use of the astringents, as inflamed tissues have to be shrunk for better

instrumentation in the removal of apoxemena; we would have little success without this particular group. There are many uses of escharotic drugs which are mentioned by Dr. Leonard, along with their special applications. There are many more which can be used to a great advantage in the isolated areas where pockets are extensive.

The new drugs, especially the sulfas, will doubtless prove valuable to periodontia practice. Penicillin will in addition have its place in our armamentarium, and others may be expected; but let us hope specific instructions will be developed as to their usage.

Trained and experienced nurses picture physicians and dentists as hobbyists in the use of drugs. Actually it is the nurses who should know their Materia Medica as it is they who administer and apply the few drugs in each doctor's armamentarium. However, this too involves a problem, as each doctor has a different treatment for the same disease.

An analogy might be cited in another "healing art." An oculist in removing a cinder from the sensitive tissues of the eye may use anesthesia *before* its removal, and a sedative *after* its removal. It is the cinder which is important, and Lord help the patient if it is not removed. A similar situation is evident in periodontia. The problem must be solved by removing the infected tissue. This may be accomplished by anesthetics and astringents, and the use of sedatives to encourage healing, but don't forget the apoxemena.

Dr. Leonard has given us a well considered and comprehensive outline of the drugs we now have at hand. We have additional needs, however, for we still lack complete information on or uniformity in the most scientific use of the drugs available. Perhaps in the not too distant future our Academy will see fit to establish a selected group of members well qualified in the drug field, to counsel us in the uses of drugs, old and new, in the field of periodontia.

J. ALBERT JACOBSMEYER, D.D.S.,
Saint Louis, Missouri

It is generally understood by all that local anaesthetics and surgical dressing materials are of great help. Then too, the various astringents and desensitizers are needed.

I have great respect for nature's own plan of nourishment, of eradication of disease, and her method of repair. After a most careful diagnosis, I usually attempt to aid her by removing all the offending factors, systemic as well as local and then, by means of a carefully planned program of gum massage allow the blood to restore the normal tissue tone once again. In my own opinion very few drugs are helpful in this procedure.

I have had no outstanding results with the sulpha-group. I hear of very favorable gum changes when penicillin is given systemically by physicians.

SIDNEY SORRIN, D.D.S.,
New York, N. Y.

I have read your most excellent Initial Statement, and wish to congratulate you on a most exhaustive study of the subject, "What Drugs Are Useful in Periodontal Practice." The article adequately describes the place which drugs occupy in the treatment of periodontal disease. However, I disagree with the inference (on page 1 paragraph 2) that traumatic occlusion is a modifying process rather than a primary factor, and its correction only an adjuvant treatment. Our experience of over twenty years devoted exclusively to periodontia, has proved to us that traumatic occlusion, abnormal wear, and food impaction, (which are easily controlled by dentists) occupy a most important place in the etiologic picture as primary factors in the production of periodontal disease. Unless these causes are eliminated, regardless of other important etiologic factors, a permanent result cannot be expected.

There are a few drugs which I have used that have proved most helpful in a number of regions in the mouth:

1) Phenol, 95% has been most helpful in pericoronitis, particularly where patients complain of pain in the region of the third molar accompanied by trismus and swelling of the lymph nodes. A wisp of cotton is saturated with phenol and placed between the tissue and the tooth. Within two or three minutes the pain is gone, and the patient may be able to open the mouth with ease. The phenol is removed and a wisp

of cotton immersed in alcohol is then placed into the same area. On most occasions, this one application is sufficient. However, another application can be applied in a day or two.

2) Where inflammation of a pocket has occurred, resembling a parodontal abscess, the use of a 5% salt solution—(two and one half teaspoonfuls in a glass of warm water (Box) every hour, reduces the inflammation, sufficient to give great relief. In a few days, curettage can be instituted with ease and comfort.

3) I have found that a topical anesthetic

℞ Benzocaine 7.5
Oil of peppermint 6.0
Phenol crystals 3.5
Ethylene glycol q.s. 50.0
Mix and make a solution by aid of heat.

Sig. Topical anesthetic (Blass)

applied to the gingival tissues prior to curettage has been helpful for its anesthetic action on the gingival tissues.

4) Chronic desquamative gingivitis or conditions like pemphigus have been relieved of the pain by the use of the following formula:—

℞ Mucilage of Acacia (U.S.P.) 240.0
Oil of peppermint ..... .12
M.ft.
Sig. Dilute with water half and half and used as a mouth wash.

5) Where grinding has made teeth sensitive, I have found immediate relief when either formalin (40% formaldehyde) or saturated solution of potassium carbonate in glycerin is applied to the surface of the affected teeth by burnishing. (200 grains of potassium carbonate dissolved in one ounce of heated glycerin will make a saturated solution).

6) As a mouth wash and dentifrice, I have used the following preparation based on the Prinz formula

℞ Phenolphthalein ..... gr. 3
Menthol ..... gr. 7
Saccharin ..... gr. 10
Methyl salicylate 3ss
Calcium oxide (Lilly) 32ss
Sodium chloride ..... ℥16
Misce et adde
Alcohol 3ss
M. ft. pulv. disp. *in vitro*
Sig. ¼ teaspoonful in glass of warm water as a dentifrice.

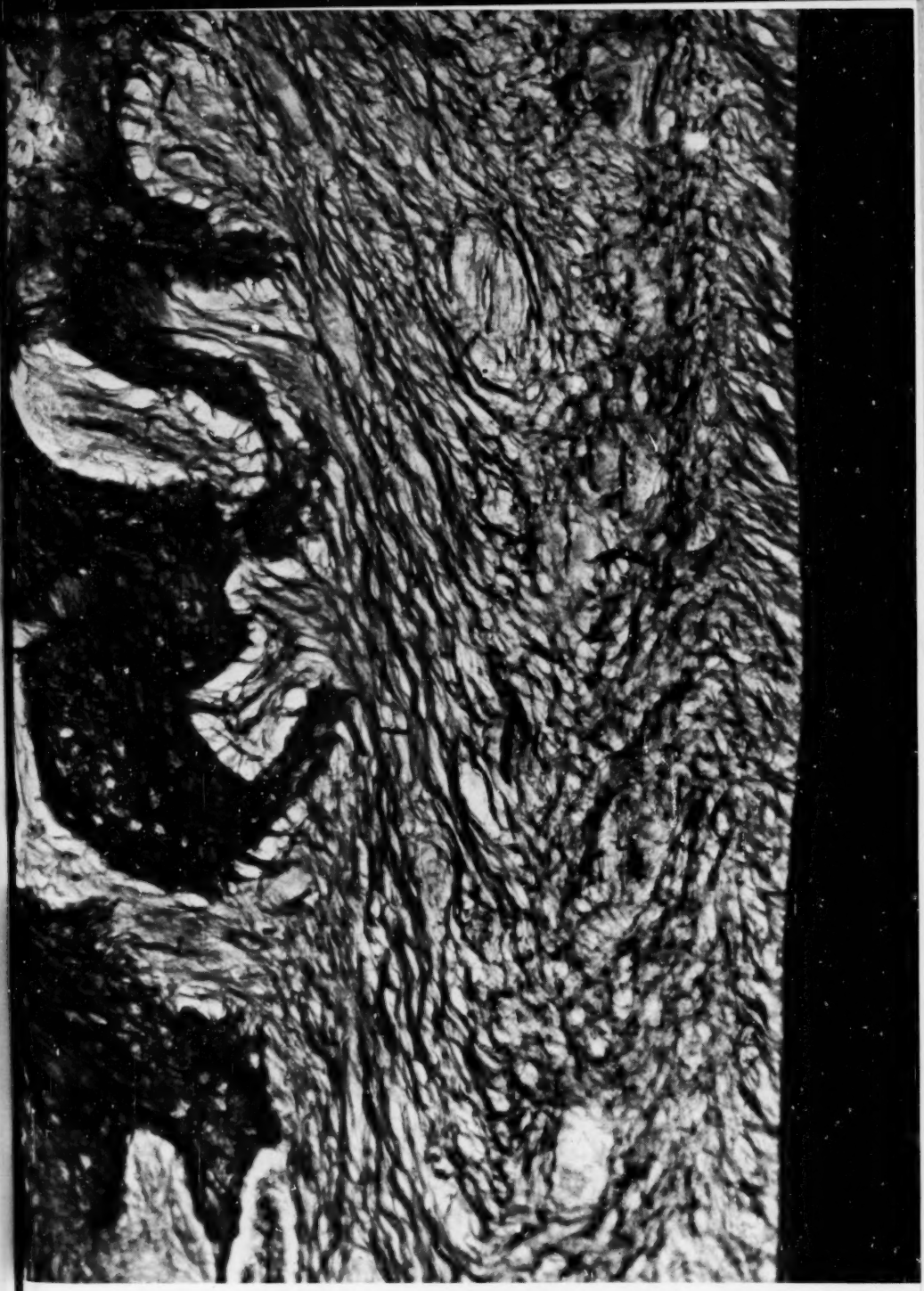
7) For a deodorant mouthwash, I have advised Potassium permanganate solution 1/2000. One grain of the drug dissolved in 4 ounces of water is used as a mouthwash and repeated when needed.

Concluding Statement

A recent reading of Rowe's book *Elimination Diets and Patients' Allergies* suggests that many of the lesions of soft tissues of the mouth are manifestations of allergy. These allergies in the tissues of lips, oral mucous membrane, tongue, palate, and throat may be from direct contact with the allergen but more often the allergen is blood borne and comes from some food or drug which has been eaten or otherwise absorbed. Sometimes the shock tissue is in the stomach and affects the mouth by reverse peristalsis. Drugs have little use in the treatment of allergic manifestations but the subject of allergy must be mentioned in connection with treatment of soft tissue lesions of the mouth if for no other reason than to avoid wasting time on drugs for the cure of allergic manifestations.

Many thanks are due to the discussors for their contributions on short notice. Drs. Harry Lyons, J. E. Aiguier, and J. A. Sinclair were among those asked for discussions but were unable to comply in the time available. The writer was informed that Dr. Sinclair is seriously ill. We miss the contributions of these men who are especially versed in the subject.

HAROLD J. LEONARD



PERIODONTAL MEMBRANE. Erupting tooth, *not yet in function*. Periodontal fibres attached to cementum and bone, but *not functionally* arranged. (Bernhard Gottlieb).

Editorials

Emphasis on Periodontology

IN ORDER to promote any cause, to develop any plan or to carry out any project it is essential that emphasis be continually placed upon it. The new graduate in dentistry while tending to follow his own inclinations in the emphasis he puts on the different forms of dental service, has none the less been largely influenced by his teachers at dental school, by their comparative enthusiasm for their respective subjects. The students reflect the teachers' attitudes.

While there are limitations as to how much of any subject can be taught in the time available yet it is important to discover just how true these limitations are. A just balance should be made between preserving the teeth by restorations and preserving them by applying known means of maintaining health in the supporting tissues.

It is generally conceded that inflammation is undesirable in the gingival tissues because of its probable effect upon the alveolar bone, the depth of the gingival sulcus, and the patient's home care of the mouth. It is seldom that serious attention is paid to slight inflammatory conditions of the gingiva unless the patient complains, although a long series of unpleasant effects may follow; even the loss of the teeth may be an eventuality.

While much information as well as mis-information has flowed under the bridge since the pioneering efforts of Dr. John M. Riggs in periodontia, it is a matter for grave concern that enough emphasis is not yet placed upon the teaching of periodontology in a number of dental schools.

Emphasis on periodontology in dental education can be secured only when it is given at least equal recognition with other subjects taught, and teachers chosen whose *first* interest is periodontology. And this must not be a passive interest but an active enthusiastic one. Enthusiasm is contagious. No one can transfer his interest in any subject to another person unless he is enthusiastic about it.

Periodontology needs no apology. It does not need to lean upon any other branch of dentistry or medicine. It is sometimes tied up with Oral Surgery where extreme conditions with spectacular surgery submerge its identity. At the other extreme it has been linked with the training of dental hygienists and preventive dentistry. It has also been dissected and the pieces scattered around among the different departments where its importance is lost sight of.

It is fundamental to dental health service, associated with most dental operations in diagnosis, prognosis, and treatment, and it is the strongest link between dentistry and medicine. In fact, it can no longer be either ignored or given a minor or subsidiary position in the dental curriculum. The time is *now* when proper emphasis must be given to periodontology in dental practice and in dental education and without apology to anyone.

Our interest in the periodontal tissues has been so superficial and often lacking altogether, that the average dental patient, layman or physician thinks of dentistry in relation to the teeth *only* and they are surprised when reminded of

the fact that without the periodontium teeth would be useless, and if the periodontal tissues are hopelessly diseased the teeth are a menace. We must not serve the teeth less well but the periodontium better.

Let us not continue to be likened unto the foolish man of the parable who built his house upon the sand. —G.R.S.

An Appropriate Frontispiece

THROUGH the courtesy of Dr. Bernhard Gottlieb a beautiful illustration of the periodontal membrane with ideal functionally arranged periodontal fibres has been used as a frontispiece for this issue of the *Journal of Periodontology*. What could be more appropriate?

A companion illustration on page 67 shows the periodontal membrane of an erupting tooth *not yet in function.*

These two illustrations tell plainly an interesting story to the busy clinician who has all too little time to spend in the histological study of the tissues he deals with and therefore often finds it difficult to interpret the unclear photomicrographs shown in some dental periodicals, even when accompanied by good legends. The histopathologist would probably not have any difficulty, but few dentists have had his training. To be of value to the average reader of our dental journals a better quality of illustrations is desirable. Less commercial art used in the advertising pages and better photography for illustrating scientific articles would be an improvement.

The use of the front pages (sixteen) of the *Journal of the American Dental Association* for advertisements, also the inside front cover page, is no improvement. The relation of advertising to text in the May, 1945 issue is 74:125. If so large a proportion of advertising is necessary, that is another question, but it should not deface the first pages of a scientific or professional journal.

The American Association of Dental Editors, of which the *J.A.D.A* is a Publication Member, has urged its member editors to confine advertising to one section at the back of their respective publications. "The Journal" as it is now called has formerly coöperated with this request. It represents *dentistry* in the United States. Could it be that some dentists are interested in bringing about a situation whereby *our* Journal will have the appearance of the throw-aways? There is more to this idea than you think.

If the Mountain will not come to Mahomet there is no need for Mahomet to go to the mountain. —G.R.S.

(e) Symptomatology and Diagnosis

(Continued from 15(1):40. 1944)

369—Box, H. K.: **Can specific infective factors operate to deepen a pocket.** *J.C.D.A.* **10**:427. 1944.

Box suggests that a form of periodontitis exists in which the infection is specific rather than nonspecific in nature, and characterized by necrosis of the epithelial attachment with rapid apical shifting of the pocket base. This organism, he believes, closely resembles certain forms described by Beust, Tunnicliff, the Deans, and other workers. Box believes that from a study of his specimens it seems reasonable to suggest that the abounding free fusiform organisms and attached forms play some role in the etiology of the pathologic changes.

—*H. M. Goldman*

370—Goldman, H. M.: **Relationship of the gingival crevice and the alveolar crest.** *J. D. Res.* **21**:561. 1942.

The alveolar crest may show apposition of bone even in the presence of gingival inflammation and ulceration of the crevicular epithelium. In other cases under similar conditions resorption of the alveolar bone may be present. Therefore, the author concludes that the condition of the gingiva and of the gingival crevice does not necessarily determine whether or not there will be resorption of the alveolar crest, and that resorption may be influenced by other factors. This he believes is further evidence to substantiate the clinical differentiation of two types of periodontal disease, gingivitis and marginal periodontitis.

Author's Abstract

371—Henny, Fred A.: **Significance of blood dyscrasia in oral surgery.** *J. O. Surg.* Apr. 1944. Abstr. *reprinted* from *J.A.D.A.* **31(17)**:1267. Sept. 1, 1944.

Patients with blood dyscrasias frequently make their first professional contact with dentists. Oral lesions alone are not completely diagnostic, but the picture should arouse suspicion and call for further investigation. The normal blood elements are described in this paper and deviations as well. The two broad classes of oral manifestations in blood dyscrasias are (1) lesions of the oral mucous membranes and (2) oral hemorrhage without lesions. Class 1 includes anemia, leukemia, agranulocytosis, purpura, polycythemia and scurvy. Class II embraces hemophillia, vitamin K and vitamin C deficiency, and purpura.

372—Martin, H., and Koop, C. E.: **The precancerous mouth lesions of avitaminosis B.** *Am. J. of Surg.* **42**:195. 1942.

The authors believe that degenerative mucous membrane changes are found in the majority of cases of mouth cancer. These degenerative changes are usually the result of a combination of several forms of chronic irritation (tobacco, syphilis, sepsis, avitaminosis). The most frequent and probably the most important form of chronic irritation from the standpoint of cancerigenesis in the oral mucous membranes, is that of avitaminosis B. Most patients with mouth cancer already are suffering from a mild to marked avitaminosis B on admission. This disorder tends to be aggravated by the necessarily restricted diet during the painful stages of mouth cancer. —*H.M.G.*

373—Mosinger, W. J. C.: **Pemphigus vulgaris malignus.** *D. J. of Australia.* **16**:409. 1944.

Mosinger reports a case of pemphigus vulgaris in a woman, aged 46, who was referred to him for treatment with a diagnosis of trench-mouth. The past history revealed that six months previously the condition had started as a tonsillitis, immediately after which a small ulcer developed on the margin of the tongue opposite the left lower first molar. Treatment had no effect and four months later a general flare-up with ulcerations all over the mucous membrane of the mouth occurred; at the same time there was spasmodic bleeding of the nose, and a slight accumulation of pus in the inner corner of the right eye.

The author treated the case as a trench-mouth for two months with no results. At

the end of this period the patient developed an ulcer on the skin over the lip. The ulcer was the size of a shilling, surrounded by a bright red halo and covered with a layer of pus. In quick succession new ulcers followed indiscriminately distributed all over the body, with exception of hands, feet and face. The ulcers began as a blister on the skin, accompanied by an itching sensation, the contents of the blister very rapidly became pus, the covering skin broke, and the ulcer was established. The diagnosis of pemphigus vulgaris was apparent. The patient died in three months, nine months from time of onset of the disease.

—*H.M.G.*

374—Murphy, R. C., Jr.: **Eruptive fever involving mouth and eyes. (Stevens-Johnson's disease) Report of case.** *New England J. of M.* **230**:69. Jan. 20, 1944. Abstr. *reprinted* from *J.A.M.A.* **124(7)**:1127. April 22, 1944.

Murphy reports that a man aged 22 was hospitalized three days after he had noticed a swelling between the upper lip and the gum. Later blisters began to appear on the buccal mucous membrane. At the time of hospitalization he had a temperature of 101 F. The conjunctivas were diffusely inflamed. The buccal mucous membrane, gums, palate and uvula were covered with many tight vesicles. There was also a small amount of red inflammatory reaction and sticky exudate about the urethral meatus. During the first two days of hospitalization the disease ran an alarming, fulminating course. The temperature rose rapidly and ran a hectic course, up to 104.6 F. All the pearl-like vesicles in the mouth ruptured, leaving a loose, dirty, whitish slough. By the third day there was a massive slough involving the entire mucous membrane of the mouth and sparing only the tongue. The nasal mucous membrane sloughed in a less dramatic manner. Large blebs appeared on the glans penis also with superficial sloughs. Both conjunctivas were inflamed, but no vesicles formed about the eyes. A semipurulent exudate flowed continually from the eyes. On the arms and legs punctate red areas appeared and expanded, and in the center of each a vesicle appeared. These vesicles ripened into thin walled bullas and ruptured. On the fifth day temperature fell and the patient began to improve. The sloughs in the mouth and on the penis were not complete before the third week. A conjunctival culture yielded *Staphylococcus aureus*. Smears of the bullas were negative both for eosinophilic polymorphonuclear leukocytes and for organisms. No significant evidence of the heavy metals was found on qualitative tests of two twenty-four hour urine specimens. The patient had had a mercury-amalgam tooth filling one and one-half months previously, but no other significant metal or drug history could be elicited. The therapeutic measures included sulfadiazine for five days, the forcing of fluids, colonic irrigations, calcium gluconate intravenously and salves, washes and other local applications to the mouth, penis, and eyes. At the end of seventeen days the skin lesions had crusted and mostly fallen away. The author says that nothing is known of the fundamental nature of the disease or of its etiology. Neither drugs nor Vincent's organisms have been implicated. The disease is not typical of erythema multiforme, and it is the enanthem rather than the exanthem that is its constant feature.

375—Reich, C.: **The oral manifestations of blood diseases.** *Annals of Dent.* **3(1)**: (new series):19-20. June, 1944.

Reich believes that the dentist by proper interpretation of oral conditions can be of great value in the early detection of blood diseases since the oral manifestations often constitute the first symptoms. The author describes a few of the various symptoms in the oral cavity pertaining to blood disease.

376—Joint Committee on syphilis of the mouth: **Syphilis of the mouth with a brief description of some of the more common diseases which simulate syphilis of the mouth.** (Social Hygiene Committee, Committee on Community Dental Health, Association of Syphilis Clinics. *Annals of Dent.* **3(2)**: (new series) :39-63. Sept. 1944.

With the broadening scope of dental practice in its relation to bodily health, the responsibility of the dentist in discovering oral manifestations of systemic disease becomes increasingly important. Ability to recognize the manifestations of syphilis of the mouth and to differentiate lesions which are not syphilitic is of great importance, not only to the dentist and to his patient, but also to the community at large.

The diagnosis must depend on a study of the composite picture, for example, coexisting lesions on other parts of the body and lymph node involvement in suspected chancre. The patient's history is of importance in diagnosis and differential diagnosis and together with the clinical signs and symptoms suggests the diagnosis. In order to establish the diagnosis of syphilis, one of several laboratory procedures is indicated:

1. The darkfield examination for *T. pallidum.*
2. The blood tests (complement fixation and flocculation tests).
3. Diagnostic puncture of lymph nodes.
4. Biopsy of actively infected tissue.
5. The animal inoculation test.

In non-syphilitic lesions, the most important element of laboratory diagnosis is the microscopic examination of tissue and the investigation for bacteria, fungi, and viruses.

Lesions of the oral cavity are subject to alterations in their clinical appearance and, in some measure, also to their microscopic structure, as a result of their situation in a medium which not only is always wet or moist, but which harbors innumerable bacteria as well as other saprophytic organisms.

The clinical manifestations of syphilis of the mouth are described. The primary syphilitic sore or chancre, the site of inoculation, results from infection with the *T. pallidum;* this germ enters either through a visible or invisible abrasion of the skin or mucosa, or through the unabraded surface of the skin or mouth. It then penetrates into the superficial lymph spaces and, after a lapse of approximately two to three weeks, becomes manifest as a more or less indurated and circumscribed sore at the site of inoculation. Even before the chancre appears, a rapid multiplication of the treponemes takes place in and around the site of inoculation, the adjacent lymph nodes and in the blood stream. Chancres may vary in size and shape to a great degree; they may appear as small abrasions, soft to touch, showing little inflammatory reaction, to hazelnut size and larger, elevated and ulcerated, well defined, definitely indurated and even fungating mass. Enlargement and induration of neighboring lymph nodes are diagnostic signs of great importance. Darkfield examination of the secretion from the chancre reveals the presence of *T. Pallidum* in the vast majority of cases. The chancre undergoes spontaneous involution, after which an apparently symptom-free or quiescent stage of syphilis may develop, but during which the infecting organisms may still be plentiful in the mouth. Infection may occasionally be acquired without the development of a primary lesion. Thus, the secondary lesions may at times be the first manifestations of the infection.

Secondary lesions are called mucous patches and may occur singly or multiple and are a constant source of contagion. Examination of the secretion from the mucous patch by means of the darkfield apparatus will show *T. pallidum* if the lesion has not been treated. They are not painful and the patient may be unaware of their existence. These lesions are usually accompanied by a generalized symmetrical polymorphous, nonpruritic, colored eruption. Secondary lesions disappear spontaneously.

Tertiary lesions (gummas) may occur as firm nodular lesions which may attain the size of a hazelnut. They are usually painless but may cause inconvenience in speech and in mastication. The lesion, which is usually single, discharges a yellowish, glairy fluid, and forms a large irregular crater-like ulcer with soft edges. The draining lymph nodes are, as a rule, not enlarged. These tertiary lesions of syphilis are to be differentiated from epithelioma and tuberculous ulcers.

Perforation of the palate is characteristic enough to be a stigma of acquired tertiary syphilis or late congenital syphilis. It usually occurs near the center of the hard palate, but it may involve the soft palate, destroy the uvula and cause necrosis of the nasal bones. Gumma of the palate is painless and causes little inconveniences while it is developing and undergoing softening.

Syphilitic glossitis consists of first a superficial type where there are a few areas of superficial sclerosis, and second, a single, smooth, red surface of varying induration which may be fissured. Absence of pain is, as a general rule, characteristic of syphilitic glossitis.

Congenital syphilis of the mouth is manifested by lesions which correspond to those of acquired syphilis in the various stages of infection. Developmental anomalies of the teeth due to syphilis are not characteristic in the deciduous set but are diagnostic in the

permanent set. The disease is also responsible for many cases of malformations and malocclusions. The first and second permanent incisors and the first molars are most frequently the site of these deformities.

The remaining 15 pages of the article deal with the non-syphilitic lesions which may simulate syphilis and from which a differential diagnosis must be made.

It is the reviewer's opinion that this article is one of the best on this subject. The discussions on other oral diseases which may simulate syphilis are of extreme help to the dentist in differentiating the syphilitic lesions of the mouth. It is recommended that this article be read in its entirety.

—*H. M. Goldman*

(f) Treatment

(Continued from 15(2):121, July, 1944)

687—Christensen, G.: **Paraffin packing and its application to periodontal treatment.** *Australian J. of Dent.* **48**:188. 1944.

The application of a dressing with a paraffin wax base to the gingival tissues was first advocated by Dunlop. Christensen believes that packing of pockets is helpful in any type of treatment of periodontal diseases, be it the conservative method or gingivectomy.

The paraffin wax is applied down to the base of the pocket by means of a metal syringe. The syringe is immersed in hot water 125-130°F. This softens the wax sufficiently for it to be forced under pressure into the pocket and interproximal spaces.

The technique consists of applying the wax from the labial aspect with the nozzle of the syringe actually in the periodontal pocket. The wax is squeezed out until a large amount is forced through to the lingual aspect, and then, while still squeezing, the nozzle is withdrawn, leaving a surplus on the labial aspect. This bulk of wax is squeezed together by means of the forefinger and thumb and a collar effect is obtained.

In order to ensure that the packs remain in position for the desired time, they can be reinforced by a floss silk ligature. This simply consists of a piece of waxed floss silk tied at the center around the last tooth of the area to be packed and then the silk is brought forward in the form of a continuous ligature with one strand passing lingually and one strand labially and a knot in each interproximal space. When the wax is forced into the pocket then it flows above and below each knot and the knot serves to lock the pack in place.

The author summarizes its uses:

(1) A valuable adjunct to scaling.

(2) Obliterates false pockets by reduction of edema.

(3) Provides a bland antiseptic dressing for the lining wall of the pocket.

(4) Aids healing of breaks in the crevicular epithelium.

(5) Prevents irritation of wall of pocket by calculus.

(6) Reduces hypertrophy by pressure.

(7) Aids improvement of tone of deep tissues.

(8) Is valuable as a post-operative dressing.

(9) Places tissues in best possible state for surgical intervention.

—*H.M.G.*

688—Glickman, I.: **The bone factor in periodontoclasia.** *Mass. D. Bul.* **20**: 14. 1944.

Recent developments in periodontology emphasize the need for an understanding of the changes the alveolar bone undergoes in the course of progressive periodontoclasia in order to effectively diagnose and treat this condition. This is so because regardless of the condition of the gingival tissues, it is the destruction of alveolar bone which in the final analysis is responsible for the loss of teeth in periodontoclasia.

Glickman states,

Because of variation in the 'bone factor,' inflammation of equal severity and duration does not produce the same degree of bone loss in different individuals. The severity of gingival inflammation observed clinically is, therefore, not an index of the severity of bone destruction. This accounts for the many cases of periodontoclasia in which the gingival inflammation is severe and of long duration while the bone loss revealed radiographically is relatively slight.

The effect of gingival inflammation upon the alveolar bone in which a primary tendency toward bone loss exists, differs from the effect of gingival inflammation under normal conditions. When the normal tendency toward bone formation is inhibited because of systemic conditions, the barrier against bone destruction stimulated by inflammation is dimin-

ished and the resultant bone loss is severe. The degree to which such bone loss is increased beyond that which occurs in individuals in which the bone factor is unaltered depends upon the severity of the systemic disturbance.

Exposition of the importance of the 'bone factor' in periodontoclasia introduces a significant concept into the field of periodontology. It reduces the many complexing clinical aspects of periodontoclasia to a common denominator of microscopic bone changes and thereby affords a fundamental direction for the diagnosis and treatment of this condition. Although it does not minimize the significance of local inflammation, it emphasizes the important role of the systemic background in the regulation of periodontal bone loss. It demonstrates that the severity and duration of gingival inflammation are not the sole determinants of periodontal bone destruction because the response of bone to external stimuli is at all times governed by systemic regulation. It describes how periodontoclasia occurs in the absence of gingival inflammation. It points to the reason for the thorough elimination of gingival inflammation by careful local therapy when such inflammation exists in periodontoclasia. It explains why the ultimate control of periodontoclasia is dependent upon the detection of systemic disturbances which favor bone resorption and the application of such tangible information to clinical practice.

—*H.M.G.*

689—Greene, J. H.: **Form, location and classification of subgingival calculus.** *Am. J. Ortho. & Oral Surg.* **30**:505. 1944.

A macroscopic study was undertaken to determine the anatomic relationship of the periodontal pocket to subgingival deposits, in the hope of evolving an effective, precise technic of scaling. After an analysis of 200 teeth, the author concludes that a ledge type of calculus first forms and if undisturbed, maintains its original position however deep the pocket may become. A calculus-free area of cementum varying from one to ten millimeters in depth was observed between the calcareous deposit and the ligamental attachment. With the teeth in situ this subcalcular sulcus is of marked significance as an area which permits proper instrumentation and the efficient removal of calculus without injury to the soft tissue wall of the pocket and the ligamental attachment. It furnishes an important tactile landmark in instrumentation.

—*H.M.G.*

690—Mead, S. V.: **Studies of the effect of ingestion of citrus fruit upon gingival hemorrhage.** *J. D. Res.* **23**(1): Feb. 1944.

Seventy men were fed 1½ grapefruit per day in addition to the regular rations for 5 months. A group of 65 men on the same rations without added citrus fruit served as controls. Increased ascorbic acid blood and urine levels and improvement in gingival condition were noted.

—*H.M.G.*

691—Miller, S. C.: **The choice of treatment of periodontal pockets.** *Amer. J. of Orth. and Oral Surg.* **31**:34-40. Jan. 1945.

There are three broad categories into which all procedures of periodontal pocket elimination fall: 1—Radical elimination, 2—Conservative surgical procedures, 3—Conservative subgingival curettage.

The first procedure in the handling of any periodontal case should always be conservative. In most cases pockets shallow out and gingival tone is restored after balancing of occlusion, subgingival curettage and intelligent toothbrushing procedure.

In cases that do not respond to the above method more radical steps are necessary. There are four general groups that fall into the category of radical pocket formation. 1. Surgical, 2. Electrical, 3. Chemical, 4. Mechanical.

1. Surgical: Ward technic—elimination of pockets down to solid bone, creating a new continuous gingival margin, free of pockets and decalcified bone. The Crane-Kaplan, the new Kirkland operation and the Black operation are also discussed under this heading.

2. Electrical: The pocket may be trimmed by the monopolar cutting current or the electrocoagulation by polar technique of Webb.

3. Chemical: Any caustic chemical can be used to reduce pockets by direct application. Unfortunately many of these are injurious to tooth structure.

4. Mechanical: Atrophy of the soft tissue wall of the pocket can be accomplished by the compression of the gingival tissues by paraffin wax, base-plate gutta-percha, or zinc oxide eugenol cement.

Indications for radical surgery are discussed. Under conservative surgery the Flap operation (Rubicek), the original Kirkland operation and the Buttonhole incision (Miller) are briefly outlined.

—*V. P. Chnapko*

Reprinted from *Dental Abstracts* 1(2): 18. Feb. 1945.

692—Roth, H.: **Vitamins in periodontal disease.** *J.A.D.A.* **32**:60-66. Jan. 1945.

The majority of patients have some form of avitaminosis usually of a multiple nature. Clinical experience shows that 500 mg. daily of vitamin C will improve and maintain the health of the gingivae to a better degree than local treatment without vitamin therapy, however, treating gingival conditions by dietary means alone is not adequate, if one is seeking the optimum nutrition and health of tissues.

—*E. Wishengrad*

Reprinted from *Dental Abstracts.* 1(2): 18. Feb. 1945.

693—Tishler, Benjamin: **Some periodontal problems.** *J.A.D.A.* **31**:496-501. Apr. 1944.

The purpose of the article was to acquaint the general practitioner with problems met in periodontal practice and the writer feels that some persons are more liable to develop periodontal pathosis than others, everything being equal. The inception occurs during early life and not middle age as is commonly believed. McCall's study of cases of children affected by the disease in the Guggenheim Clinic is cited.

Many periodontal cases are not properly treated by the general practitioner who frequently does not recognize symptoms until they are far advanced because pain is not a symptom as in caries and as a consequence, more teeth are lost because of periodontal pathosis than from caries.

The writer feels that diet has not been proved to be an important factor in etiology and refers to an experiment that he made with 101 patients and which was later repeated at the University of Minnesota dental clinic. A comparison of both experiments showed like conclusions.

He claims from his experience of referred cases that are wrongly treated by general practitioners that Vincent's infection is often diagnosed incorrectly. There is no such condition as chronic or sub-acute Vincent's infection because the disease is essentially an acute one.

Emphasis is placed on gingival stimulation with stiff toothbrush bristles and interdental stimulators and a short description is given of what occurs to nourish the pericementum, alveolar process and even the tooth during their use. The dentist should furnish the brushes at stated intervals because patients frequently use them until their efficiency is lost. Patients should always be taught brushing at the chair and not simply instructed.

These are the salient points of this paper.

—*Author's Abstract*

694—Yardeni, J.: **Shall we grind the teeth or raise the bite?** *D. Mag. and Oral Topics.* **61**:89. 1944.

Yardeni states that the orthodontist's key to occlusion is neutral occlusion, proper horizontal relationship, while the periodontist regards normal functional occlusion in respect to proper vertical dimension. The orthodontist confines his attention to establishment of normal anatomy, he adjusts statics and sees that the various parts fit together; dynamics mean to him development and growth. The periodontist, on the other hand, directs his activities towards the securing of normal physiology; dynamics means to him, function. He must reckon with the constant play of varying factors, which produces an ever-changing picture; axial movement and attritional wear; mesial wandering and proximal wear; reactions of bone and gingival condition; nutrition and system.

Yardeni believes that grinding of teeth is indicated chiefly in cases of supraclusion. In the infraclusion cases in which there may be marked frontal overbite and underdeveloped posterior teeth, he believes grinding to be unbiologic and causes harm. In such cases the restoration of the bite to the proper height by a combination of grinding, alignment, and raising the bite is clearly indicated. In these cases he advocates a method for raising of the bite by the use of an unilateral bite block which allows for vertical eruption of the teeth not splinted. When the splint is removed, the previously capped teeth take their turn in a similar process of eruption and uprighting.

—*H.M.G.*

BOOK REVIEWS

Parodontal Disease, by E. Wilfred Fish, M.D., Ch.B., L.D.S. (Manch.), D.D.Sc. (Melb), D.Sc. (Lond.); Dental Surgeon, St. Mary's Hospital, London; Late Dental Surgeon, Royal Dental Hospital, London; Late Examiner in Dental Surgery and Pathology, University of Manchester; Hon. Research Associate in Physiology, University College, London. 186 pages. 72 illustrations. Published by Eyre and Spottiswoode Ltd., 14 Bedford Street, London, W.C.2.

This book should be read and studied not only because it deals with a subject of paramount importance in the practice of dentistry and not only because it contains so many very practical suggestions, but also because the author is one of the recognized leaders in dentistry in Great Britain. Dr. Fish, with his high academic distinction, research outlook, and practical experience, has also been appointed recently, by the Privy Council, to the Chairmanship of the Dental Board of the United Kingdom for a period of five years.

The book is written as by a capable teacher to a student class. It is explicit and is apparently written by one who practices exactly what he preaches. One is convinced that Dr. Fish gets results by his methods in his own practice. It is not a piece of theorizing by someone who is not distinguished in the practical field.

The author points out that firmly attached gum margins, pink, hard and healthy, are more important even than the texture of the teeth themselves and therefore it is the *first* responsibility of the dentist to see that the gums are not only properly treated, but that the patient follows the advice he is given. To this end, the dentist should make clear to the patient that the soft diet of civilized man does not provide sufficient friction to keep the gum margins healthy and that a special effort should be made to encourage young people, who are notoriously intolerant of discipline and prodigal of nature's gifts, to institute an artificial application of friction to the gums in order to avoid periodontal disease later on.

In the treatment of all forms of periodontal disease the author follows the well-established principles of first eliminating infection and then keeping the tissues healthy by stimulation. His methods are different from those used by many periodontists in this country but his results are unquestionably excellent. There is more than one road leading to Rome as has been proved in this war.

Dr. Fish shows to the patient in a mirror each interdental space as soon as a space has developed and teaches the patient how to care for it.

> The essence of parodontal treatment is not the execution of an elaborate operation such as gingivectomy on a late case of pyorrhea [periodontal disease], though that may be called for in neglected mouths; but it is the constant care and advice and the untiring and patient supervision lavished on every part of the gum margin of every patient from childhood to old age.

This means that all cervical margins of fillings must be polished, that the interdental spaces must be kept clean, and the gum margin in the space must be kept hard, and if this is done and the gum becomes firmly keratinized, the deeper tissues, already sterile, will automatically become and remain healthy. For this purpose and because easily obtained, the author recommends a balsa wood-point which can be modified with a pen-knife when necessary.

Dr. Fish contends that once the wood-point habit of friction or stimulation is established that there is no need for a special toothbrush to get between the teeth. For those whose gums tend to bleed easily, he recommends at first the use of a soft badger-hair toothbrush. If the gums are healthy, a medium hard toothbrush is reasonable. However, as soon as the wood-point habit is established, there is no need for special methods of brushing or for a special brush; that every advantage is to be gained by reverting to a fairly soft, broad, short-headed brush with equal-length bristles which give the maximum friction to the buccal and lingual gum margins.

Dr. Fish considers that it is physiologically impossible to obtain reattachment of inflamed gum to the infected surface of a

tooth, even if that surface could be completely curetted which he states is impossible.

The author points out that when certain teeth are bearing an undue share of the occlusal stress of mastication, that this condition must be relieved; however, apart from this, little emphasis is placed upon obtaining a balanced occlusion as is stressed by so many periodontists of this continent. He states also that vitamin deficiency has not been conclusively shown to be a causative factor, therefore little emphasis is placed on diet. One wonders if the excellent results reported could not have been more easily obtained had the dietary been given greater consideration.

Vaccine treatment and chemotherapy are discussed but not recommended; however, it is stated that sulphonamide treatment might be valuable previous to operating in the case of a patient with endocarditis or it might be indicated before treating deep pockets in order to avoid the possibility of a periodontal abscess. The sulphonamides may have their place in the periodontal treatment of patients with endocarditis but it is difficult to see how their use could ever be justified in order to avoid a periodontal abscess.

This reviewer has had unusual pleasure and profit from reading this book and can commend it with enthusiasm.

M. H. GARVIN

FIFTH POSTGRADUATE PROGRAM FOR

THE AMERICAN ACADEMY OF PERIODONTOLOGY

Sponsored by

THE W. K. KELLOGG FOUNDATION INSTITUTE
GRADUATE AND POSTGRADUATE DENTISTRY
University of Michigan, Ann Arbor, Michigan
APRIL 30 - MAY 2, 1945

MONDAY, APRIL 30

9:00 Registration

10:00 Biology of the Bone, Harry Sicher, M. D., Assoc. Professor of Anatomy, Chicago College of Dental Surgery, Chicago, Illinois.

(Bone as a tissue, bone as an organ; histogenesis of bone; growth of bone tissue; resorption of bone tissue; organogenesis of bones; growth of long bones; growth of the skull; growth of the mandible; influence of bone growth on eruption and tooth movement; functional adaptation of bone; influence of pressure and traction of bone.)

2:00 Pathology of Bone. Joseph P. Weinmann M.D., Asst. Prof. of Oral Pathology, Chicago College of Dental Surgery, Chicago, Illinois.

(The effect of dietary deficiency on bone—vitamin A, vitamin B, vitamin C, vitamin D; the effect of hormonal disturbances on bone—pituitary gland, parathyroid gland, sex hormone, thyroid gland.)

7:30 Metabolism of Calcium as Affected by the Various Periods of Growth, the Intake of Vitamin D, and the Influence of the Endocrine Glands. J. A. Johnston, M.D., Pediatrician-in-Chief, Henry Ford Hospital, Detroit, Michigan.

TUESDAY, MAY 1

9:00-10:30 Disorders of the Blood Associated with Lesions of the Mouth and Throat. Frank H. Bethell, M.D., Assoc. Prof. of Internal Medicine and Asst. Director of Simpson Memorial Institute, University of Michigan, Ann Arbor, Michigan.

10:30-12:00 Discussion of Bone (Questions and Answers), Balint Orban, Chairman.

2:00 Applied Anatomy. Harry Sicher, M.D.

7:30 Rare Books. Colton Storm, A.B., Curator of Manuscripts, Clements Library, University of Michigan, Ann Arbor, Michigan.

WEDNESDAY, MAY 2

9:00 Pathology of Arthritis. Granville A. Bennett, M.D., Professor of Pathology, University of Illinois Medical School, Chicago, Illinois.

(Anatomy and physiology of normal joints; classification of arthritis; etiologic and pathogenetic considerations; gross and microscopic changes in each major type of chronic arthritis.)

1:00-2:30 Allergy in Relation to Dentistry. George L. Waldbott, M.D., Specialist in Allergic Diseases. In charge of Allergy Clinics at Grace and Harper Hospitals—Detroit, Michigan.

(Discussion of the mechanism and the pathology of the allergic wheal; the manifestations of allergy, its causes and methods available for its diagnosis; special consideration of allergic conditions in the mouth; principles of treatment.)

2:30 Relationships between Dentistry and Hematology. George J. Anday, Capt., MC. Before entering Service was: Asst. Clinical Professor and Director of Laboratory of the Loyola University Clinics, Loyola University School of Medicine, Chicago, Illinois.

(Pathology of the teeth or periodontal tissues may cause quantitative and qualitative changes in the circulating blood cells of otherwise normal persons. Such changes were traced since the beginning of the century with the hope that they may be of use as a guidance in diagnosis and during the treatment of dental conditions. Results of these efforts are briefly commented upon. On the other hand blood diseases may cause oral and dental symptoms. Some of these diseases are discussed and demonstrated by lantern slides.)

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—SHUMAKER, W. A., Editor of *Law Notes, (J.A.M.A.)*

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